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MONTHLY JOURNAL OF
THE MUSHROOM GROWERS'
ASSOCIATION

MGA BULLETIN

JANUARY, 1958 · NUMBER 97

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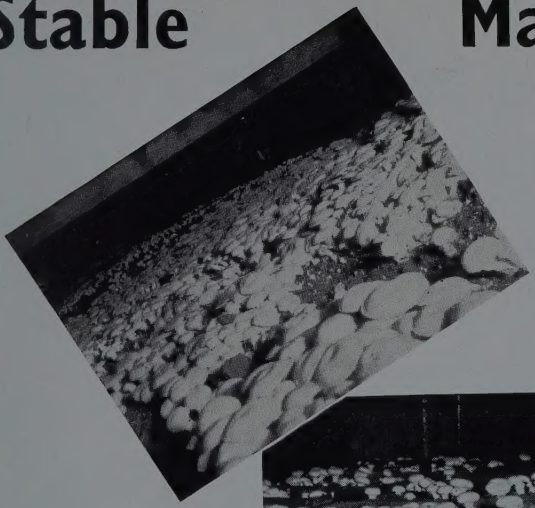

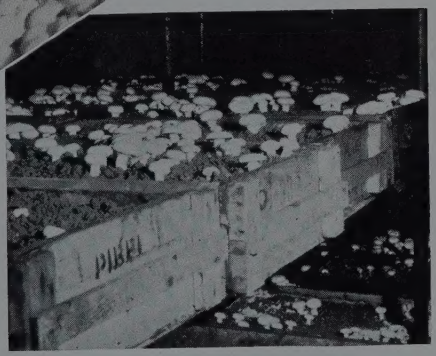

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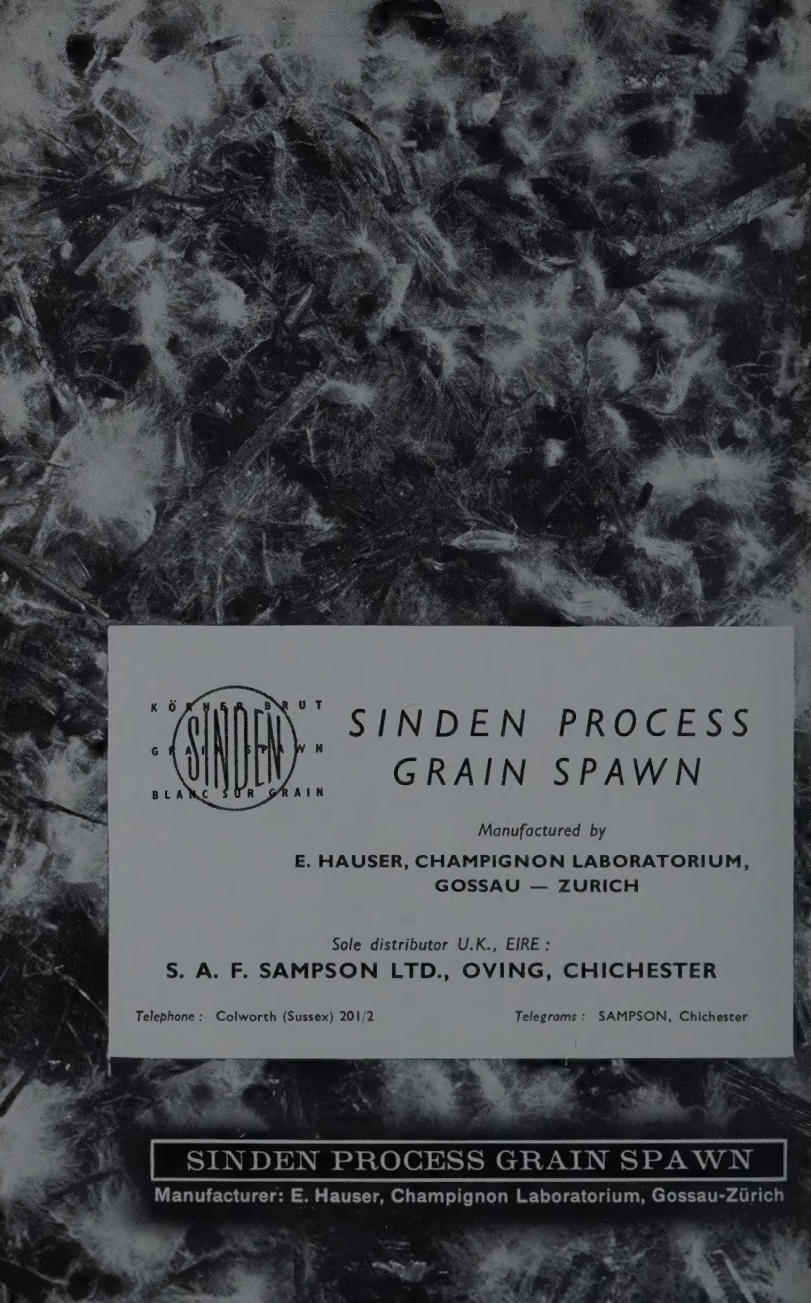

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The
MGA BULLETIN

JAN. - 1958
NUMBER 97

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EDITORIAL

DAVID AND THE GOLIATHS

Viewed objectively, and with everything in its right proportion, the year ahead for those engaged in the production of the cultivated mushroom is reasonably bright and cheerful.

In this issue is an article giving details of the progress now being made with the mushroom unit at the Glasshouse Crops Research Institute at Littlehampton, from which a great deal is now expected and, for that matter, always has been. There is news too that the resources of the NAAS, in no small measure, are to be concentrated on the real cause and cure of La France.

Elsewhere in these pages is a most heartening letter from a firm in Glasgow showing how, with a little effort on the publicity front, mushroom sales over a period of three days were increased 300%!

There is news too of a new insurance scheme for growers, on which an MGA Sub-Committee worked for some time following a severe loss by fire sustained by one member of the Executive Committee.

No doubt, as the year progresses, there will be the usual scare, either from the over production bogey which, for some, is a little too real to be lightly dismissed, or from an attack of cecids or some other mushroom disorder and no doubt, as in the past, the cultivated mushroom will attract some very good publicity and some publicity which is not so good. There will, of course, be the customary drop in prices in the summer months, the rise in autumn and the fall about Christmas-time when turkeys and other Christmas fare provide rather more competition than can be successfully resisted. These and other things are pretty certain to happen but the future for the cultivated mushroom continues bright and certain.

There is, without the slightest doubt, a vast untapped market awaiting the mushroom, a market which, equally surely, will one day be explored to the full by both fresh and canned mushrooms. Whether or not the Publicity Committee can continue to forage successfully into the large world of publicity, carrying out its David act amidst so many Goliaths and without a miracle to help them, remains to be seen. Perhaps it is true that the age of miracles is not yet passed.

On the latter note it is perhaps somewhat sober to reflect that, at the present rate of contributions, the mushroom grower is asked to contribute just 1d. for every £3 15s. worth of mushrooms sold. One of the Goliaths with which the mushroom has to contend is the egg producers who contribute 1d. for every 8/3d. worth of produce sold! With thousands being poured into tomato publicity and many thousands threatened on behalf of apples, the mushroom has a fight on its hands, but it will win through especially if funds for publicity are placed on a much more realistic level. WRA

EXECUTIVE COMMITTEE

Criticism over " Watery Stipe " Publicity

Chairman of the MGA, Mr. G. V. Allen, presided over a meeting of the MGA Executive Committee at the Connaught Rooms, London, on 10th December, at which some members sharply criticised the recent publicity given to " Watery Stipe " Disease. In the opinion of some members of the Committee the publicity had resulted in a drop in the demand for mushrooms with a consequent drop in market prices. It was reported that some midland markets appeared to be affected and that salesmen were attributing the poor prices to the adverse publicity.

Mr. G. V. Allen explained that there had been no special statement released to the Press and, in fact, the Press were aware of the actual meeting with which the publicity was associated, before the meeting had taken place. There had been requests from one or two newspaper men to attend the actual meeting and in view of the need of the Association to maintain and cultivate good relations with newspapers he had agreed to their request. The original information about the outbreak of the " Watery Stipe " trouble had come from Covent Garden. Mr. Allen pointed out that the MGA's Publicity Consultants, Albion Publicity, had not been concerned with the criticised publicity in any way.

Mr. G. W. Baker, Chairman of the Publicity Committee, agreed that, in future, every effort should be made to dissociate disease from mushrooms in statements which might be published in the national press.

The Secretary stated that two days after the story " broke " in the newspapers he had enquired about prices from three Covent Garden salesmen and was told the prices remained quite unaffected.

Among other matters discussed was a memo. from Mr. Atkins in which certain aspects of the future of the industry were outlined and possible action suggested. A small committee was set up to investigate and report.

The Secretary reported on the question of employed students and stamp duty and stated that where a student was employed for more than 4 hours in any given week the full stamp duty was payable by employer and employee. Exemptions were only given by the Ministry in very special cases, hop picking for example, where gang labour was employed and it was not possible to say exactly who was employed and for how long, payment being made to the gang leader.

FACTS

A GROWER SHOULD KNOW

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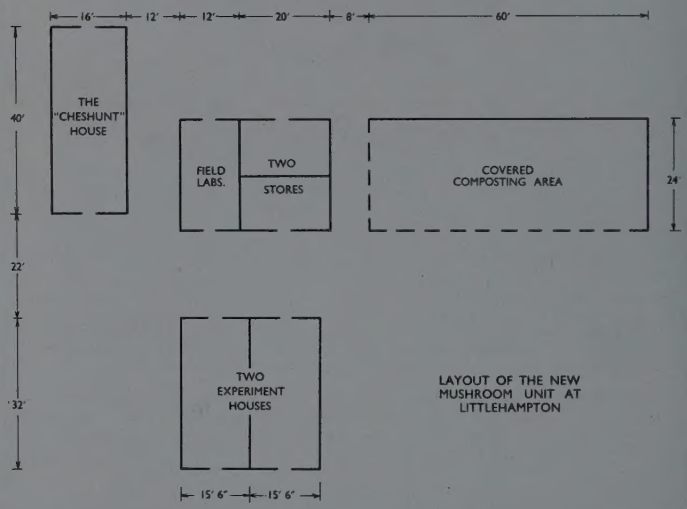

LAYOUT OF THE NEW MUSHROOM UNIT AT LITTLEHAMPTON

At the beginning of October we learnt with pleasure, relief and excitement that work had begun on the foundations of the long-awaited mushroom research unit at the Glasshouse Crops Research Institute at Littlehampton.

The photographs reveal that building operations are proceeding well and, provided there is no serious hold-up with the weather in the next two months, the new buildings should be brought into use this Spring.

In the meantime the Cheshunt mushroom shed is being filled this month for a new series of experiments, mostly on casing materials. The heating system has now been completely reorganized and, with the other improvements carried out last year, the house will provide the staff with valuable experimental facilities for some years to come.

Mr. F. W. Toovey, Director of Research, wrote in October *Bulletin* 94: " The buildings will of course give a tremendous fillip to our mushroom research, but I should not like to minimize the value of the work our mushroom staff have been doing during the past year with the slenderest of resources. I think it will be evident from the papers they will present at Southport that it has been a year of good solid achievement, and a number of interesting and important new lines have been opened up. When the new research buildings can be brought into use, probably in the spring of 1958, it should be possible to make rapid progress in following up these investigations and in developing others."

The Cropping Houses have advanced considerably since this photograph was taken on November 28th.

The Stores and Field Laboratories are rising fast (photograph taken on Dec. 6th).

SMALL ADVERTISEMENTS (*cont'd on p. 32*)

SALE: Owner bought larger farm. Mushroom Farm 30,000 sq. ft.; growing houses all heated, electric light, water in houses. Together with two cottages and garage. Reasonable to clear. ALSO, one converted Manure Turner, electric motor, in good order £25; one 25 ft. endless belt elevator for emptying houses, electric motor, good order £50: THREE electric heater fans, 15 kilowatt, for peak heating, will blow hot or cold, as new £20 each. All the above can be seen working. J. E. HATFIELD, Hessle Mount, Hessle, E. Yorks.

A Talk given at York in October, on:—

BETTER CULTIVATION OF MUSHROOMS

By Dr. I. F. STOREY (NAAS, Shardlow Hall, Nr. Derby)

There have been many changes in the practice of mushroom growing since I gave a talk here in 1950 and it is useful to survey just what has happened during the last seven years.

Horse manure still holds its own as the basic material for the production of mushrooms and whilst synthetic composts are being used very successfully by some growers, there has been no big swing over to growing on synthetic composts. By and large the heavy type manures have gone and most of the material is of the light strawy type. Supplementation is now more widely practised and a variety of materials are added to manures to encourage the fermentation process. Dried blood, poultry manure and a variety of activators produced by commercial firms are all being used. Composting times have been reduced and it is rare to find many growers taking more than 20 days to prepare a compost. As a rule most growers seem to prefer somewhere near the 15 day mark.

During the years there has been a gradual change over from the manure spawns to grain spawn but the use of grain spawns has sometimes proved difficult if rats and mice are troublesome. It is perhaps in casing materials that the biggest change has taken place, and peat and various peat mixtures have become widely adopted. There are several reasons for this but one of these is that labour requirements are reduced to a minimum when peat is used.

There does not appear to have been any marked increase in the yield of mushrooms as expressed in terms of lb./sq. ft. of bed space on holdings where yields were good, but it is certainly rarer to see very many bad failures. Yields per ton of manure are no doubt going up, but the most striking change has been in the rate at which the crop of mushrooms is produced and this has resulted in an increase from $2\frac{1}{2}$ to 3-4 crops per year being taken in any one house.

Whilst this speed up of cropping is not usually of the growers' choosing, it is certainly a feature of cropping at the present time. Many crops have given their yield of mushrooms after six weeks' cropping. The shorter composting times may be encouraging this but I feel certain that the whole of the trouble cannot be attributed to this.

How then can mushroom production be improved? It is as well to say at the outset there is no short cut to good production. Every precaution must be taken to prevent the build up of pests and diseases on a mushroom farm and a sound programme of disease and pest control measures must be the basis on which the rest of the operations are carried out.

Turning to composting, a variety of systems have been advocated within recent years but I have failed to see any marked advantage to be

gained from any one method. My view for what it is worth is that nothing like the maximum output is being obtained from our composts, and other factors rather than the available food supply in the composts are responsible for the level of yields being obtained at the present time.

In order to obtain a good compost, a good heat up at the start is essential and in this supplementation plays its part. There should be adequate water applied at the start and to get the required quantity into the compost treading the manure at the time of the first turn may prove beneficial. The traditional practice of reducing the time between turns as composting proceeds and also reducing the size of stack are still well worth doing as by both these means a better type of aerobic fermentation is being encouraged. If composting is done in the open then attention should be given to protecting the piles from the wind, as a strong wind can markedly reduce the temperature in the pile and so prevent fermentation taking place.

Turning to house conditions, and from my experience these can play a very big part in influencing the yield of mushrooms. It may well be that house conditions are preventing the maximum production being obtained from the composts which are being prepared at the present time. A house must be well insulated, and there should be an adequate air/bed ratio. At least 4 cubic feet of air space should be allowed for each square foot of bed space—more if possible. In addition there should be an adequate means of ensuring that the air can be changed. At least 1-2 air changes per hour are desirable, but during spells of warm humid weather it may be necessary to increase this very considerably. There should then be means available to increase the number of air changes up to 8 or 10 if the need arises.

The function of casing soil is still not fully understood. Adequate wetness of the peat mixtures is desirable but unless this is accompanied by means whereby the surface can be dried rapidly, there may be trouble during spells of very warm humid weather. I have been impressed with the effect that moving the air within house has on yield. Increases of yield up to $\frac{3}{4}$ lb. per sq. ft. have been observed and in addition there has been a marked improvement in the quality of the mushroom itself. Furthermore this rapid fall in cropping after about six weeks has been prevented and profitable production has been maintained up to 8 weeks or even longer. The reason for this is not clear but increased air movement and change may be removing toxic products from the bed as well as encouraging the proper development of the mushroom by maintaining a proper water loss from the mushroom fruit body. Open stacking of trays as against close stacking may be helpful in this connection as well as allowing the top of the casing soil to come above the level of the tray side—both practices which were advocated by Mr. R. G. Darlington, of Worthing, at the recent Southport Conference.

Diseases and pests are still with us but perhaps not as troublesome as some years ago. Eelworms, Cecids and Phorids can still cause trouble and one always wonders for how long an insecticide is going to remain effective. Two fungicides which have been found useful in recent years

are zineb for the control of *Mycogone* and chloronitrobenzene (P.C.N.B.) for the control of *Dactylium*. This last disease has always been a troublesome one to control and this latter material may find a useful place in mushroom growing. Finally this " Watery Stipe " condition which has been widespread in recent months. We have no evidence to suggest that the disorder is the result of any disease but rather the result of conditions within the house itself preventing the evaporation of water from the beds.

ANNUAL GENERAL MEETING

The Annual General Meeting of the Mushroom Growers' Association will take place on Tuesday, 18th March, 1958, at The Connaught Rooms, Great Queen Street, Kingsway, London (Holborn Underground Station).

The Chairman's Reception will commence at noon, followed by the Annual Luncheon at 1 p.m., and the Annual Meeting at 2.30 p.m.

All members, Grower, Overseas and Associate, together with their wives and friends, will be most welcome.

Full details will be announced later.

ANY OFFERS ?

A Kent mushroom grower with a son aged 18 years is anxious for his son to work on another grower's farm for a period of three months from the beginning of March and would, in exchange, take another grower's son for a similar period and on an exchange basis. He suggests that each should receive the normal agricultural wage, would each live in the house with a suitable deduction for board and lodging. Offers to the MGA Secretary.

HERE AND THERE

According to the *Oldham Evening Chronicle* a 7½ lb. mushroom has been found at Zalaegerszeg, South-East Hungary. In a forest at Keszthely, Eastern Hungary, 50 mushrooms, each weighing about 3 lb. each discovered.

A record shipment of 1,800 bales of peat moss were recently shipped by *Bord na Mona*, the Irish Peat Board, from Dublin to Gloucester, according to the *Irish Independent*. It is the first time the Board has used the Severn port. Sussex growers, says the report, are using the peat in increasing numbers. The MGA members who went to Dublin last year and visited one of the Board's bogs will remember the generous hospitality of the Board on that occasion.

WITHOUT COMMENT

A refusal by the Chigwell (Essex) Council to allow Major A. E. Barker of Bracken Drive, Chigwell, to grow mushrooms in a shed at the bottom of his garden, has been overruled by the Minister of Housing and Local Government. Major Barker hopes to produce up to 500 lb. of mushrooms a year and according to *The Times*, Major Barker said, " his little venture " would give him, in his retirement, " £1 or £2 a week "

Fred. C. Atkins re-visits the .....

FRENCH RESEARCH CENTRE

I have just paid my annual visit to the French mushroom growers' Research Centre at Montesson, just outside Paris. I found it quite transformed since the official opening ceremony, attended by the delegates to the Third International Conference in June, 1956.

Those who were present on that memorable occasion will recall that we were entertained to a champagne reception in the large open shed. That shed has been built in and is now a well-equipped laboratory, an office, and a room for meetings.

Two rooms for the investigation of diseases are nearing completion. They are alongside the laboratory, sensibly quite separate from the main caves.

The composting area has been concreted over, and is drained so that the run-off can be pumped back on to the stacks.

At the outset of 1956 trouble was experienced through not being able to compost evenly the small three-ton stacks of manure. This difficulty has been largely overcome by surrounding the stacks with plastic film and aerating from below.

Cropping variations were aggravated by the low temperature of the caves. About 50° F. could be reached by closing them up, but this was of course undesirable; and when fresh air was introduced the temperature sometimes fell to 40° F. Now an air heater has been installed which gives 58° F. and yields are satisfactory.

To augment the existing heat room, two smaller pasteurizing chambers have been built. In them it will be possible more accurately to control temperature and humidity. There are three spawn-running rooms.

Monsieur Guy Renard, president of the C.T.E. Co-operative, and Monsieur André Sarazin, president of the technical committee, are responsible for the direction of the centre and its research programme, assisted by Monsieur S. Trocmé. Monsieur C. Allard, the mycologist, spends much of his time on mushroom problems and, like Monsieur Trocmé, works under the general direction of the mycological department of the Institute for National Research in Agronomy. Mlle. Blondeau, licencié és sciences, a biologist from the National Centre of Horticulture, began her duties in November. There is a full-time secretary; and Monsieur Bouillon, the foreman, has a staff of three men.

I asked Monsieur Sarazin whether the growing of mushrooms interfered with the experiments. "We grow mushrooms to have life in the Station," he told me in reply. "We believe it is a mistake to divorce research too completely from commercial practice. We can carry out practical experiments at the same time, such as trials with different casing materials, and we receive sufficient income from the sale of the crop to pay the wages of the practical workers. We crop for eight weeks and we aim to have 2,000 trays always in crop and about to crop."

Speaking of the research programme, he said the first two series of experiments with the new pasteurizing chambers were designed to study the effect of varying temperatures and differing amounts of fresh air during peak heat. Although it is realised that each compost presents an individual problem, they plan to standardise the composting technique as far as this is possible, and over an extended period of several years, with a weekly throughput of 200 trays, he thinks it should be possible to reach certain broad conclusions on optimum temperatures and air changes.

With my personal experience of the MRA's struggles over growers' preference for *ad hoc* experimentation, I asked Monsieur Sarazin whether such a long-term investigation would be sufficiently attractive to maintain the financial support of the French industry. The Government makes an annual grant to the Centre, but it is on a 50 : 50 basis. He replied : " With the courageous examples of the MRA before us, we plan for to-morrow. I believe the future of mushroom growing in France lies in trays in caves. This brings within the bounds of possibility a control of climate during pasteurization and spawn-running which is not feasible with ridge beds. Economic conservation of manure supplies and higher potential yields with trays have already been demonstrated. Initially we are concentrating our attack on the critical pasteurizing period. Our primary target is a better understanding of the fermentation processes, and to this end there will be parallel investigations with an improved, better insulated composting Drum, so that microbiological and chemical changes can be studied." Trials with the *tonneau* were resumed in December.

Occasional two-week courses in mushroom growing were recently initiated; the next one will be held at Montesson in February. Theoretical aspects are considered in the mornings, with lectures by the technical staff and others; and the afternoons are devoted to practical work. There are several conducted " farm walks " in neighbouring caves. Anyone may attend provided he is seriously interested in commercial growing, subject of course to the committee's approval.

I asked Monsieur Sarazin whether this splendid idea did not give rise to the sort of question we hear sometimes in England to-day: " Why help others to grow mushrooms? Why encourage competition?"

The reply was characteristic of the man. " We take the view," he said, " that if we are to remain a country of good mushroom growers we must move with the times and achieve a better understanding of the science of growing and the theories behind new techniques. It may sound a little pompous to say so, but we plan for prosperity."

Dr. C. J. La Touche, of Leeds University and General Infirmary, at one time microbiologist at the Yaxley Research Station, presented a paper on Dermatophytosis (skin diseases due to the dermatophyte fungi) at the World Health Organization's Seminar in Warsaw at the end of November.

RESEARCH ON CULTURAL PROBLEMS

By P. B. FLEGG

Glasshouse Crops Research Institute

In the questionnaire sent out in 1956 there was a section in which mushroom growers were invited to make suggestions on problems for future research. Some of the replies were rather wide in scope, others described problems limited to one particular farm. It is therefore rather difficult to present a straightforward list of suggestions with the appropriate number of growers who favoured each suggestion. However, a broad outline of the relative importance of the main cultural aspects of the industry as shown by the numbers of growers who mentioned each aspect is shown in the table.

As well as the aspects mentioned in the table there was a variety of other problems which could not be classified, such as improvement of yield, crop failures, the use of spent compost, and even just growing mushrooms! It is of interest to note than twenty-four growers, about a third of the sample, appeared to have no cultural problems or at least did not mention any.

From the table it is obvious that various aspects of composting and casing are the most important, with ventilation, air movement and humidity close behind.

A similar survey of problems requiring research, carried out in 1950 by Dr. R. L. Edwards and reported in *MGA Bulletin* No. 22, showed that the same general problems were given a very similar order of importance. In 1950 the demand for work on synthetic composts was high, but in the recent survey not one grower mentioned it. It is true that the MRA formula has since become established as successful, if rather expensive, but only 6% of growers used synthetic compost in 1956. Presumably the majority of growers are reasonably satisfied with racing stable manure, with or without fortification, as their basic material for composting but would like to know more about the composting process itself.

A considerable amount of work on composting problems was carried out at Yaxley but there is no doubt that there is still much more to be learnt. In view of the excellent work being carried out in Denmark by C. R. Rasmussen it has been decided that, for the time being, this aspect can be safely left in his capable hands and that research at Littlehampton should be concentrated on the casing layer and related problems. The results of Rasmussen's work in Denmark are made available in this country, and some of his recent recommendations have been carried out by several growers, apparently with beneficial result. However, compost will not be entirely neglected at the G.C.R.I.; together with the main work on the casing layer the inter-action of compost and casing layer characteristics is already being studied.

Several growers have kindly sent samples of their compost to help in this work. It has been found that additions of salts to the compost and the casing layer have a considerable effect on fruiting and yield. Further experiments are being carried out to discover whether the salt content of the compost is of importance under commercial conditions.

The work on the casing layer being carried out at Littlehampton is of a fundamental nature aimed at finding out the processes leading up to pinhead formation and the factors affecting development of the sporophores. This should eventually provide answers to most of the problems listed in the table under casing layer. Although described as fundamental research, results of practical value to the grower have already been obtained and have been published.

For many years it has been apparent that ventilation of the cropping house poses many problems apart from the engineering aspects; there

TABLE

Suggestions for Future Research from 1956 Questionnaire

Subject	Number of Growers suggesting research
Composting:	
Better understanding	16
Duration of, supplements	4
Peak heating	6
Spawn:	
Strains	2
Spawn run/casing relationship	4
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is, for instance, no definite information on such questions as the optimum conditions of relative humidity and air movement. From the survey it seems that ventilation and related problems are considered by growers to be almost as important as those of compost and casing, indeed it is probable that they are all inter-related. That ventilation is important there can be no doubt, and it is planned to begin active research work on the environmental requirements of developing mushrooms as soon as facilities are made available. To some extent it can be claimed that a start has already been made with the studies by Miss D. Gandy and myself on the definition of the limits of normality of mushroom sporophores. It is expected that measurements of mushroom dimensions will help in assessing the results from the proposed environmental studies.

It seems from the replies to the questionnaire that the industry is generally satisfied with the commercial strains of spawn now available,

only two growers suggesting this as a subject for future research. From the research point of view the situation is not so satisfactory however, and it is intended to carry out a certain amount of work on the variation between strains of spawn.

It is fair to state, then, that the main cultural problems facing mushroom growers in Great Britain are either already under investigation or will be in the not too distant future when facilities become available. The position is further improved when it is realised that two NAAS experimental stations have now taken up work on the mushroom crop and that some of the outstanding practical problems will soon be tackled.

It is worth emphasising that the programme at Littlehampton is under constant review and every effort is made to ensure that the research effort on mushrooms has a bearing on the major problems of the grower. Contact with the industry is maintained mainly through regular visits of the MGA Research Sub-Committee, headed by Mr. F. C. Atkins, and by farm visits by members of the research staff.

SPANISH MUSHROOM GROWERS MEET FOR FIRST TIME

Mr. J. Roca Dumora, of Barcelona, Spain, who is known to a number of MGA members, recently organised two meetings of Spanish mushroom growers—the first of such meetings ever to be held.

The first meeting, at Calella, was attended by 58 growers who, after hearing a lecture from Mr. Roca Dumora which lasted some ninety minutes, took part in a two-hour discussion session which followed.

A second meeting, south of Barcelona, was attended by 34 growers.

At both meetings copies of the *MGA Bulletin* and of the MGA Publicity paper bags, were displayed for all to see.

In the course of his lectures Mr. Roca Dumora (pictured herewith) spoke of the spirit of comradeship and goodwill which existed amongst United Kingdom growers and expressed the hope that this spirit would eventually be embraced by growers in Spain.

Writes Mr. Roca Dumora: "Is a Spanish MGA born? No, but I am sure this is the beginning." He added that the results are optimistic and growers are now making trials together, experimenting with short composting, the addition of more straw to the compost and experimenting too with new sources of casing soils.

WORLD'S PRESS DIGEST

The proposed **increases in charges** announced by 51 flower salesmen in Covent Garden Market were deplored by Mr. E. H. Gardener, chairman of the NFU Central Horticultural Committee. It will be interesting to see the reaction of the NFU when similar increases are justifiably made by many London firms engaged in the wholesale distribution of fruit and vegetables—as we understand they may well be in the not too distant future.

Fruit Trades' Journal, November 30/57.

Pests and diseases are controlled at Fairfield by concentrated sprays applied by **atomisation.** An air compressor and a paint spray gun are used, creating a mist that will hang in the air for 10 to 15 minutes.

Grower, November 30/57.

Before painting your glasshouse pipes or treating them with anti-rust preparation, make sure there is no **bitumen** in the material you use. The fumes are damaging, the effects last almost indefinitely, and once pipes are treated it is almost impossible to remove the bitumen.

Grower, November 30/57.

In a treatise on the Free Trade Area and British horticulture presented to the President of the Board of Trade in November, the Fruit Importers' Association suggests that, if the removal of tariffs and quotas endangers the establishment of a common agricultural policy within the Common Market area, a system of minimum import prices should be introduced. If the internal market price level were to fall to or below this **minimum price,** imports of like products would be prohibited until such time as the internal price recovers.

Fruit Trades' Journal, November 30/57.

Cotton cords impregnated with 10% parathion-xylene or 25% diazinon-xylene solution gave satisfactory to excellent **house-fly control** in dairy sheds and in a military dining hall for at least 6-8 weeks.

H. F. Schoof and J. W. Kilpatrick in *Journal of Economic Entomology*, 50, 1957.

In field experiments made at seven centres during three years, crude protein contents of **oat straw** varied widely (1·9—7·6%) with climatic factors. J. W. Dent in *Journal of Agricultural Science*, 48, 1957.

A specification is given for a light-weight **spray lance** suitable for one-hand operation with knapsack and small power sprayers. The lance comprises a brass or P.V.C. tube, a quick-acting trigger tap, a filter unit and a $\frac{1}{4}$ inch B.S.P. swirl or fan spray nozzle set at an angle. The lance has been designed for a wide range of light duties, including the spraying of mushrooms.

H. G. H. Kearns and N. G. Morgan in *Long Ashton Research Station Annual Report*, 1956.

General Sir Oliver Leese now has what must be one of the largest collections of cacti in the country. After a very distinguished military

career, he started at Worfield Gardens at Bridgnorth in Shropshire, growing mushrooms; " I have given them up now", he said.

Wayfarer in *Nurseryman, Seedsman*, November 21/57.

Proposal for extending and tightening up **regulations in the seeds trade** are made in the report of the committee on transactions in seeds, published as a White Paper (Command 300, HMSO) yesterday. The committee recommends that garden seeds should be tested for purity and germination by the recognised methods at an official or licensed station. - *Daily Telegraph*, November 22/57.

The wider use of hydraulic equipment and **automatic grabs** to enable only one operator to handle manure is expected to be the principal trend of development in the future, according to F. Hormann in *Dtsch. Agrartech.*, Berlin, 7, (5) 1957.

Agricultural & Horticultural Engineering Abstracts, 8, No. 4, 1957.

Do not dip your **bed boards** in any old chemical that happens to be advertised without first making sure that it will not interfere with your crop.

Robert Patterson in a page article on hygiene in *Commercial Grower*, November 15/57.

In a sand culture experiment with lettuces, higher levels of N were found to decrease the **water content** of the plants, while increases in P had the reverse effect. Plants deficient in K had a higher water content than those receiving an adequate amount, unless P was also deficient. D. W. Goodall, W. G. Slater and A. E. Grant Lipp in *Australian Journal of Biological Science* 10 (1), 1957.

Irish imports of mushrooms are the most serious threat to the Cheshire crop, though quality is not so good.

Cheshire Correspondent in *Grower*, November 9/57.

With the **moon** on the wane, and the colder weather and more farms affected by the mysterious brown disease, mushrooms have gone scarce. *Grower*, November 9/57.

A modified form of Glover's apparatus for measuring **transpiration rate** at different air speeds is pictured and explained by Mohamed A. A. Raya in *Proceedings of the Egyptian Academy of Science* 10, 1954. There are specially designed leaf chambers which allow transpiration rates of the two surfaces of single leaves at four different air speeds to be measured. *Biological Abstracts* (D) 31, 11, November/57.

Formaldehyde solution has the curious chemical property of " polymerising " to a white, gelatinous solid when exposed to extremes of temperature and particularly when frozen. The best advice I can give is check the drums for condition on receipt and refuse any which, after thorough rolling, show more than the slightest milkiness. Store the drums in a frost-free place.

Frank Allerton in *Nurseryman, Seedsman*, November 14/57.

While examining an adult female **phorid fly** under the microscope, Mr. I. J. Wyatt of the Glasshouse Crops Research Institute pricked the the body to examine the eggs, and was astonished to find not eggs but

an adult **eelworm** and hundreds of young eelworms. The discovery, which is new as far as the battle against the phorid is concerned, opens up a new field.
Special Correspondent in a one-page article in *Grower*, November 16/57.

T. Bukowski's "**Mushroom Cultivation,**" now translated from Polish into Russian, is devoted to the cultivation of mushrooms by large-scale and individual growers.
Review of Applied Mycology, November/57.

Cooking out involves the raising of the *air* temperature in the house to any degree sufficient to cause the bed temperature to reach *at least* 125° F.—130° F. for 24 hours.
Darlington's *Mushroom News*, October/57.

Mr. H. L. Coulson, of Lindum Nurseries Ltd., Worthing, has always been a keen advocate of mutual help between growers. It is not surprising, therefore, that he was ready to allow us to inspect the new and original **system of air-conditioning** that he is installing in a new block of mushroom houses on his nursery.
Introduction to four-page illustrated article in Darlington's *Mushroom News*, October/57.

A successful method of combining the handling parts of both shelf and tray systems has been in use at Doddington Farms Ltd., of Sittingbourne, Kent, for a year. The three or four-tiered beds (52 feet × 5 feet) were cut into units 10 ft. 6 in. long, and extra legs were bolted in. A hydraulic jack coupled to a Ferguson tractor and a special trailer enabled **a unit of mushroom shelves** to be loaded and unloaded safely and quickly by two or even one man.
R. L. O. Jackson in a full-page article in *Grower*, November 11/57.

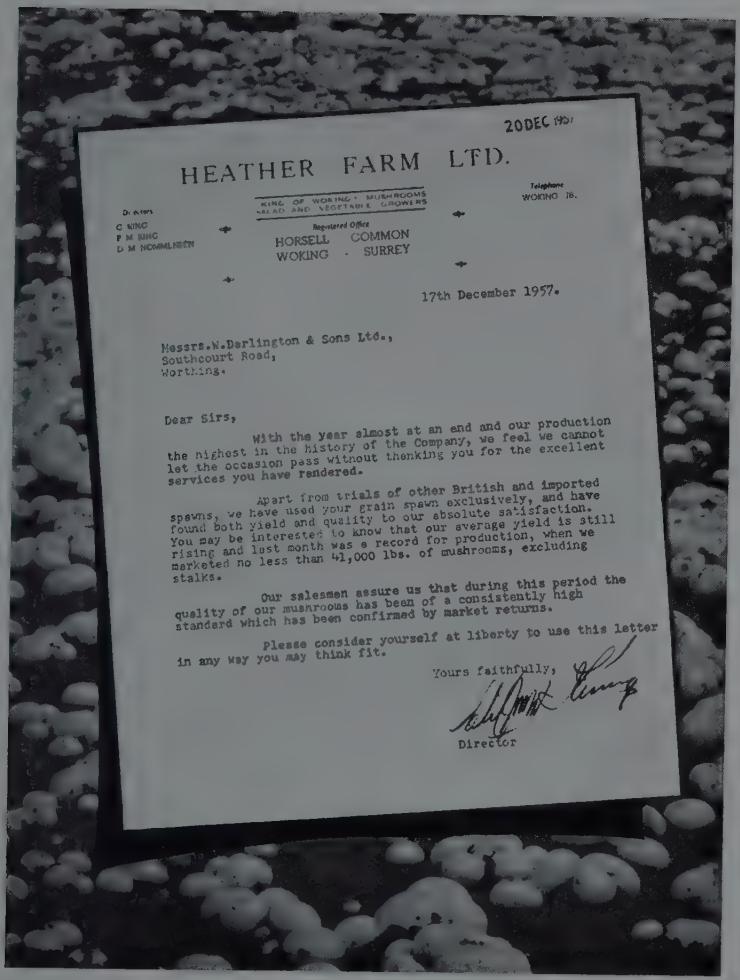
MUCH BINDING OF THE BULLETIN

—Well not as much as we should like! The MGA Bulletin contains so much useful matter that it would seem to be unwise to throw each copy away after you have read it. You cannot hope to remember all the hints, wrinkles, scientific and technical information which it contains. But, perhaps you save your Bulletins on a disorderly pile in some dusty corner of the office, and perhaps you can never find what you want when you want it.

How much better to have your Bulletins bound in a neat volume together with a Title Page, List of Contents and Index. You can then easily find any item which you require.

In order to encourage members to have their Bulletins bound we are sending with each copy of this month's issue a Title Page, List of Contents and Index. If you send these together with your Bulletins for January to December, 1957, to Messrs. W. S. Maney & Son Ltd., Russell Street, Leeds 1, they will bind them in a green cloth case lettered in gold and will return the volume to you.

This will cost you 15/6, payable to the MGA—and you will find it money well spent.



20DEC 1957

HEATHER FARM LTD.

KING OF WORKING MUSHROOMS SALAD AND VEGETABLE GROWERS

Telephone WOKING 78.

Directors
C KING
F M KING
D M NOMMENSEN

Registered Office
HORSELL COMMON
WOKING . SURREY

17th December 1957.

Messrs.W.Darlington & Sons Ltd.,
Southcourt Road,
Worthing.

Dear Sirs,

With the year almost at an end and our production the highest in the history of the Company, we feel we cannot let the occasion pass without thanking you for the excellent services you have rendered.

Apart from trials of other British and imported spawns, we have used your grain spawn exclusively, and have found both yield and quality to our absolute satisfaction. You may be interested to know that our average yield is still rising and last month was a record for production, when we marketed no less than 41,000 lbs. of mushrooms, excluding stalks.

Our salesmen assure us that during this period the quality of our mushrooms has been of a consistently high standard which has been confirmed by market returns.

Please consider yourself at liberty to use this letter in any way you may think fit.

Yours faithfully,

Director

FOR ALL METHODS OF GROWING

DARLINGTON'S 100%

PRODUCTIVE, PURE CULTURE MUSHROOM SPAWN

FIRE! ARE YOU COVERED AGAINST CROP LOSS?

New Insurance Suggested

We feel that most members are well aware of the necessity for insurance protection in respect of damage which may occur to their buildings and plant caused by fire and many will have effected appropriate insurance.

The Executive Committee has realised for some time that growers will be involved in considerable loss of cropping in the event of their buildings and bed space being damaged or put out of use following fire and that this is something which may affect a grower's income and livelihood for some weeks. It is very doubtful whether members possess any form of insurance protection against this type of loss but we are pleased to announce that it is now available through the office of the Association under policies issued by The National Farmers' Union Mutual Insurance Society Limited. This Society is the largest agricultural insurance organisation in the world and is also the official insurance Society of the various Farmers' Unions in the United Kingdom and other such Unions overseas.

The insurance is simple and provides for payment to the grower of the value of the crop which would have been obtained from bed space destroyed or damaged by fire including damage caused by water used in fire extinguishment and damage caused by smoke and also loss of crop from any bed space rendered unusable from the same causes. Insurance is effected each year for the estimated value of one crop obtained from the grower's total bed space and premium is payable on this at the rate of 3/-d.% from which all members secure an immediate and continuous discount of 20% irrespective of claims. The cost is very small as the following example will show:

MUSHROOM FACTORY FIRE

Almost £300 worth of damage was caused at Harris' Mushroom Factory, Forgandenny, by an outbreak of fire early this morning.

Prompt action by Perth Fire Brigade confined the blaze to one shed. There were 300 cases of mushrooms in the building and 50 were destroyed and many more too badly damaged to be marketed.

Firemen had to wear breathing apparatus. The cause of the outbreak is unknown.

From the "Dundee Evening Telegraph" 31st Oct.

Total bed space (including spawn running and peak heating rooms)	10,000 square feet
Estimated yield from total bed space—say	15,000 lb.
Estimated value of one crop at (say) 3/-d. per lb.	£2,250
Sum to be insured	£2,250
Annual premium @ 3/-d.% less 20% discount	£2 14s. 0d.

Loss by aircraft or articles dropped therefrom may be added to the policy at an additional charge of 1d.% less the above mentioned 20% discount.

The CULVERWELL Manure Turner

FOR MUSHROOM GROWERS

- PETROL *or* ELECTRIC
- EXTREMELY MOBILE
- £225 Ex Works

The small machine with the BIG turnover

Bruises and aerates–does not shred. CAN BE USED FOR ALL TURNINGS. 3 men handle 25/50 tons per day. Waters as it turns. Stacks up to 5 feet. By using the CULVERWELL MANURE TURNER throughout the whole composting process, the work is reduced to the minimum, time taken is shorter with improved results.

Will pass through a door 2' 10" × 5' 10" with the detachable wheels removed

E. O. CULVERWELL Ltd.

MALLING WORKS LEWES · SUSSEX

Telephone **LEWES 637** (5 LINES)

Enclosed with this issue is a special proposal form for MGA members and we hope that each grower will complete this and return it to the MGA Secretary. The scheme is open to all MGA members irrespective of where they may transact their ordinary insurances. The special terms have been negotiated by the Executive Committee with The National Farmers' Union Mutual Insurance Society Limited and the Committee strongly recommends each member to seek the protection of the scheme.

The MGA Secretary will arrange for the insurance Society's representative to call on any MGA member desiring advice over this scheme or any other insurance problem.

One of the keenest workers in the effort to get this new insurance scheme under way was Mr. E. G. Gook of Boundsgate, Badlesmere, near Faversham, Kent, a member of the MGA Executive Committee. Said Mr. Gook in an interview:—"Having had a fire and suffered, I know just what this means. The building affected was well insured and, as a matter of fact, the crop itself was pretty well finished but I still suffered a loss of around £400 or so mainly because the fire broke the cropping schedule. I think this insurance is a very fine thing."

A German Student visits England and says:—

YOU ARE GOOD PEOPLE AND GOOD MUSHROOM GROWERS

By **Hans Joachim Tschierpe** *of the Institut für Germüsebau, Berlin*

In September this year I made a journey to England which was rendered possible partly by the support of the Technische Universität, Berlin. The purpose of this journey was to learn something about the actual standard of English mushroom growing and in particular to study the English experiences concerning problems of ventilation and aeration. This problem of ventilation interested me greatly as my studies at the Institut für Gemüsebau are concentrated on the influence of carbon-dioxide on the growth of the mycelium and on the fructification of the mushroom.

Before going to England I paid a visit to Köln where the annual meeting of the German mushroom growers was taking place.

My trip to England brought home to me how much remains to be done in order to bring the German mushroom growing to the high standard set by English mushroom growers. There are some modern mushroom farms in Germany but they are very few. Most of the German farms however are to be regarded as antiquated.

What struck me most during my trip was the candour of the English mushroom growers, who made no secret of their way of growing and frankly spoke to me about their success as well as about their troubles. All the English mushroom growers seem to me to be a great team or a fraternity where all members are in constant contact and

• UP AGAIN

EVERY MONTH — AND FOR MANY MONTHS NOW

MOUNT SPAWN

Sales INCREASE

• HERE IS ONE OF THE REASONS WHY—

From : Capt. A. Sanford,
Searles Gardens,
Fletching, Sussex.

J. E. R. Simons Ltd.,
Natts Farm,
Harlow.

Dear Sirs,

Seeing the reports of various Mount users in your adverts in the Bulletin from time to time, I thought you would be interested to know of my own results.

You will be aware that I have now spawned regularly with your Mount White, both Moist and Granular, for close on two years and during this time have used many hundreds of cartons. We grow in the standard Danish fish box (composted stable manure) and crop for six weeks. Over a period of twelve months we have averaged 1·9 lb. per sq. ft., several crops exceeding 2 lb., and latterly it has been the exception rather than the rule to crop less than 2 lb. In fact our best crop recently has done 2¾ lb. As a point of interest, this has occurred since we adopted your suggestion of spawning with 25% of your White Grain, in addition to the Moist White manure spawn.

An outstanding feature of our cropping has been the really excellent quality of mushroom produced. We are delighted with the results and you may use this tribute as you wish.

Yours faithfully,
(signed) A. Sanford.

MOUNT SPAWN IS AVAILABLE
MOIST, DRY, GRANULAR **AND** GRAIN

SOLE DISTRIBUTORS :

J. E. R. SIMONS LTD.

HARLOW - - - - ESSEX

Telephone : Potter Street 65, 222, and 223

on the best terms with each other. This will certainly be the result of their membership of the MGA; that is to say, that due to the admirable work of the MGA and above all due to the assiduity and ability of **Mr. Atkins, Mr. Middlebrook and others,** all this has been achieved. I think the English mushroom farmers are to be congratulated on this organisation and its officers.

I continued my journey via Ostend—Dover and having crossed the Channel I went first to Canterbury, where I wanted to see the spawn-making firm of **H. Mount & Sons Ltd.** It was there, for the first time on this journey, I came in touch with this important problem: Does grain spawn produce small mushrooms? I found every grower to have a different opinion about that.

My next stop was **Mr. Allen's** farm near Ashford. All of you know of his trouble with the new " brown-disease " of which seems to me to be something of a mystery. " La France!"—I wouldn't know.

Mr. Allen took me to the farm of **Mr. Gook.** This sort of thing happened later on so often, that I was taken to farms which I had not intended to visit. Thus I did not see some farms to which I had written from Berlin. I have to apologise for having omitted to give further information but I had no more time to do all things which would have been necessary.

From Kent I went to Sussex where I had the opportunity to see a great many farms, above all the largest farm in your country, that of **A. G. Linfield Ltd. Mr. Rucklidge** was kind enough to show me round. After having visited some very good farms near Woking and Littlehampton (**Messrs. Darlington, Thompson, Sampson, McGregor Bulloch, Ulm, Coulson**), I spent some hours in the Glasshouse Crops Research Institute. On the way to London I visited **Heather Farm Ltd.,** near Woking and the **Broadham Produce Co.** at Oxted.

Some days in London with a lot of new " capital " impressions passed so quickly that I almost forgot about mushrooms. But the Mushroom Exhibition in the Tea Centre reminded me of them and I later met some of the most important figures of English mushroom culture—**Mr. Middlebrook, Mr. Atkins** and **Mr. Stewart-Wood!**

You will perhaps be curious to know my impressions of the mushroom growing in your country. They are so many that I can mention here the most striking ones only.

What struck me most was the common use of a peat-chalk mixture for casing and the good results obtained with these materials. Probably the good physical conditions of this material render it so suitable for this purpose—and its sterility. But don't trust too much in the sterility. In some farms it is very necessary to sterilize even that " sterile " material, because there are a lot of possibilities of infection in the farm. These possibilities however depend greatly on where the casing soil shed is situated.

You certainly know the opinion of a lot of farmers that after several years of cropping, poisonous substances accumulate on the farm and that crops thus decrease. I heard this opinion often in Germany and

also sometimes in your country. If I dare say so, I believe that only the carelessness of the grower who crops for some years successfully, entails this decrease. The longer you cultivate the mushroom, the bigger your farm, the more you must take care of sterile conditions. On every farm with monoculture, people have to meet these problems and troubles.

Remember for instance the virus in potatoes, tobacco, and tomato-monocultures. If someone is cropping very successfully, he ought to be especially careful. Parasites are probably in each corner of the farm, waiting for the moment when people forget cleanliness.

From the literature I have read I know something of the long discussions about the advantages and disadvantages of tray and shelf systems. You all know these problems by your own experiences, much better than I do. Some years ago the shelf growers were on this side and the tray growers on the other side. To-day however, I believe the two approach each other—I mean the systems; for the growers, in my opinion are really never on opposite sides! The advantages of the tray-system which seemed to be the full utilization of the cropping rooms (50—100% more bed area) does not exist any longer. If you are looking into the cropping sheds of some very successful shelf growers you will see that the relation between air and bed space has quite changed. " You are quite right " say the shelf-grower—" but there is better mechanisation in our farms!" say the tray-growers. " You are quite right." I say to the tray-growers, but you certainly know that some shelf-growers are well on the way to develop movable shelves. And the trays on the tray farms are becoming larger! I was surprised to see this development: the shelves become smaller and movable, the trays will be larger and their number accordingly will diminish in the cropping sheds. Maybe you find in a near future one system only: a synthesis of the tray and the shelf systems.

The most surprising thing I saw, was the new ventilation systems. I was most happy to see and to learn that the problem I am dealing with is very interesting to you too and that even you do not know too much about it. It is a big problem and I was glad to hear that your practice corresponds to my experiences and to my opinion: that much more air as is commonly used is necessary for successful cropping. I was surprised to see in your country ventilation systems which I never had imagined before. It is not only during cropping that much air is necessary. I believe—I cannot yet prove it, but I hope to be able to do it soon—that also more air is necessary during peak-heating and even during spawn-running.

These mentioned impressions are of course only a few of the great many ones I had in your country. I have told you how much I was impressed by so many successful mushroom farms: but I was more impressed still by the kindness of all the mushroom growers and I am most grateful to all of you for so kindly allowing the farm walks and for your generous hospitality. I am really very much obliged to all of you. May I thank you very much once more.

A MUSHROOM QUEEN?

As an aid to Publicity the MGA may have a Mushroom Queen this year.

At the December meeting of the Executive Committee the Publicity Committee chairman, Mr. Baker, said his Committee were in favour of a Mushroom Queen in 1958, and he asked the Executive Committee's approval in principle to the idea. The expenditure would probably be in the nature of £400 or more.

A suggestion by a member of the Committee that, for Publicity purposes, the MGA should sponsor a visit to this country of the American Mushroom Queen found favour with some members as did a suggestion from the Publicity Committee that, in the event of a Queen being selected, with a visit to Paris as the prize, it might be possible to link up with the French Federation in the matter.

The Publicity Committee is to consider both suggestions before reaching a final decision.

CONCRETE PUBLICITY EVIDENCE

It is so often very difficult and often impossible to truly assess the value of this and that publicity effort that the letter reproduced herewith from **Malcolm Campbell Ltd., 40 Ingram Street, Glasgow C1,** came as a refreshing change and a particularly striking example of what can be achieved in the field of publicity for cultivated mushrooms. By a display of mushrooms, and advertising material supplied by the MGA, sales of mushrooms at a time when sales and prices tend to decline, were **increased more than four-fold.** The letter reads:—

Dear Sir,

We thought you would be interested to know that as a result of the display material and mushroom recipe bags which you sent us, we have substantially increased our sale of mushrooms.

Our company normally sells about 30 × 3 lb. chips of mushrooms per day. The following is what has been* issued to our branches for a special week-end display.

Thursday, 12th December	95 × 3 lb. chip.
Friday, 13th December	130 × 3 lb. chip.
Saturday, 14th December	130 × 3 lb. chip.

If at any time your association is considering a special sales promotion, we would be interested in co-operating. We would also hope to do another special display week-end for mushrooms.

Thank you for your help in this matter.

Yours faithfully,
for MALCOLM CAMPBELL LTD.,
D. A. COOK,
Director.

*Subsequent enquiry revealed that these were firm sales.—Ed.

In error, the following were omitted from the December Membership List :—

Green, W. Howard, Concord Foods Inc., Concordville, Pa., U.S.A.
Jerrard, D. H., Five Bridges Filling Station, West Stour, Dorset.
Kimmins, H. A., 5 Garrick Road, Worthing, Sussex.
Marshall, W. (Hessle) Ltd., The Cliff, Hessle, Yorks.

PUBLICITY SUBSCRIBERS
1957 LIST

	£	s.	d.
Salesmen:—			
Francis Nicholls Ltd., Smithfield Market, Birmingham	157	10	0
R. E. Jenkinson Ltd., Covent Garden Market, W.C.2	105	0	0
T. J. Poupart Ltd., Covent Garden, London, W.C.	100	0	0
Dan Wuille & Co. Ltd., Covent Garden Market, W.C.2	50	0	0
Wm. Artindale & Son Ltd., Castlefolds Market, Sheffield	21	0	9
J. Collingridge Ltd., Covent Garden Market, W.C.2	25	0	0
Geo. Jackson & Co. Ltd., Smithfield Market, Birmingham	5	5	0
Ed. H. Lewis & Sons Ltd., Covent Garden Market, W.C.2	5	5	0
A. E. Phippen (Brentford) Ltd., Brentford	5	5	0
C. Snowdon & Co. Ltd., Castlefolds Market, Sheffield	37	17	2
Marks & Co. Ltd., Covent Garden, London, W.C.	1	1	0
J. Stratton Ltd., Salesmen, Spitalfields Market, London, S.E.1	5	5	0
Mitchell Bros. (Andover) Ltd., Salesmen, Vigo Road, Andover	2	2	0
Sir Ernest Shentall Ltd., Salesmen, Chesterfield, Derby.	2	2	0
Herbert Hitchcock & Son Ltd., Salesmen, Boro' Market, S.E.1	5	5	0
Wm. Morgan & Co. Ltd., Salesmen, Custom House Street, Cardiff	10	10	0
Ernest White Ltd., Salesmen, Kirkgate Market, Leeds	5	0	0
Jas. Blackburn (Manchester) Ltd., Salesmen, Smithfield Market, Man.	10	10	0
C. W. Tooley & Son Ltd., Salesmen, Nottingham	2	2	0
Wm. Tolley & Son Ltd., Wholesale Market, Nottingham	2	2	0
G. E. Leatherland Ltd., St. Andrew's Street, Newcastle-on-Tyne	66	16	6
Geo. Stansell Ltd., Spitalfields Market, E.1	10	10	0
Barnes Bros. (Brentford) Ltd., Brentford	5	5	0
P. & T. Fitzpatrick Ltd., 22 Queen Square, Liverpool 1	5	5	0
Wm. Bulman & Leatherland Ltd., 30 St. Andrew's St., Newcastle-on-Tyne	5	0	0
Jackson & Lakin Ltd., Nottingham	7	14	6
Reuben Levy Ltd., 88 Spitalfields Market E.1	10	11	11
Sundriesmen, etc.:—			
Thomas Elliott Ltd., Eagle Mills, New Church Road, S.E.5	10	10	0
Shirley Organics Ltd., Vicarage Wharf, Battersea, S.W.11	25	0	0
Stable Manures Ltd., Manure Dealers, Worthing and Newmarket	60	0	0
Basket Merchants :—			
F. Gough & Son Ltd., Fishergate, Norwich	10	10	0
Arthur Coomer Ltd., Ferlington, Portsmouth	5	5	0
***Spawn Makers/Merchants:—**			
H. Mount & Sons Ltd., Littlebourne, Canterbury.			
Pinkerton's Scottish Mushroom Laboratories, Millerston, Glasgow.			
W. Darlington & Sons Ltd., Southcourt Road, Worthing.			
Monlough Food Production Co. Ltd., Ballygowan, Belfast.			
S. A. F. Sampson Ltd., Oving, Chichester.			
Geo. Monro Ltd., Hertford Road, Waltham Cross.			
Agricultural & Chemical Co. Ltd., 51 Barbican, London, E.C.1.			
Others:—			
P. C. Brown & Co., Biddulph, Stoke on Trent	10	10	0

*Amounts collected by Spawn Merchants are not for publication.

Blowing our own trumpet

Trade Mark

For . .

MUSHROOMS

too we can offer a first-class sales service and an excellent outlet

FRANCIS NICHOLLS

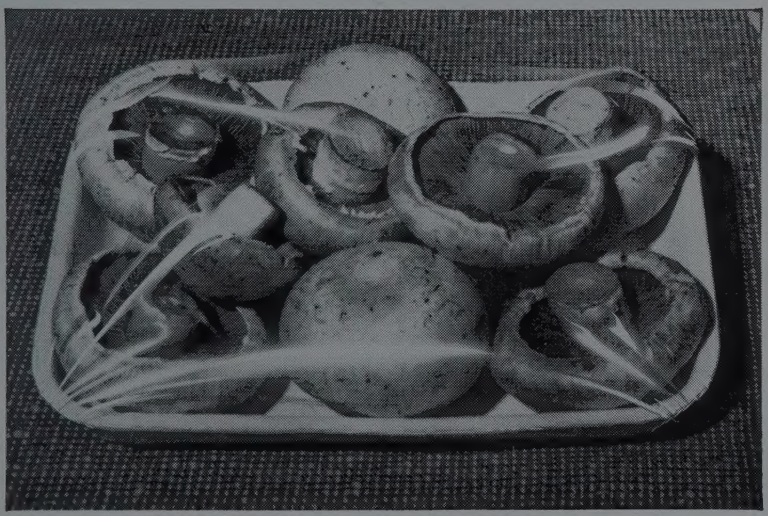
LIMITED

Smithfield Market

BIRMINGHAM

Associated Companies in all the densely populated areas.

THE PUBLIC BUY MORE AND MORE MUSHROOMS



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J. E. R. SIMONS LIMITED specialise in all requirements for commercial mushroom growing. **J. E. R. SIMONS LTD.** advise on culture, packaging and marketing. **WE SUPPLY** Gypsum and Peat, Insecticides, Santobrite for dipping trays and timber, Mushroom Trays, Comporotor Manure Turner, Thermometers, Hose, Hose Fittings and Clips, Chip Baskets and Lining Papers, Rubber Bands, MRA Activators, Paper Bags for used compost, Bag Ties and Tools, special hard service Electric Bulbs, Roofing Felt and Roof Ventilators, Aluminium Paints and Bitumen High Gloss Paint, Aprons and Leggings, Polythene Sheets, Cleaning Brushes and Weighing Machines.

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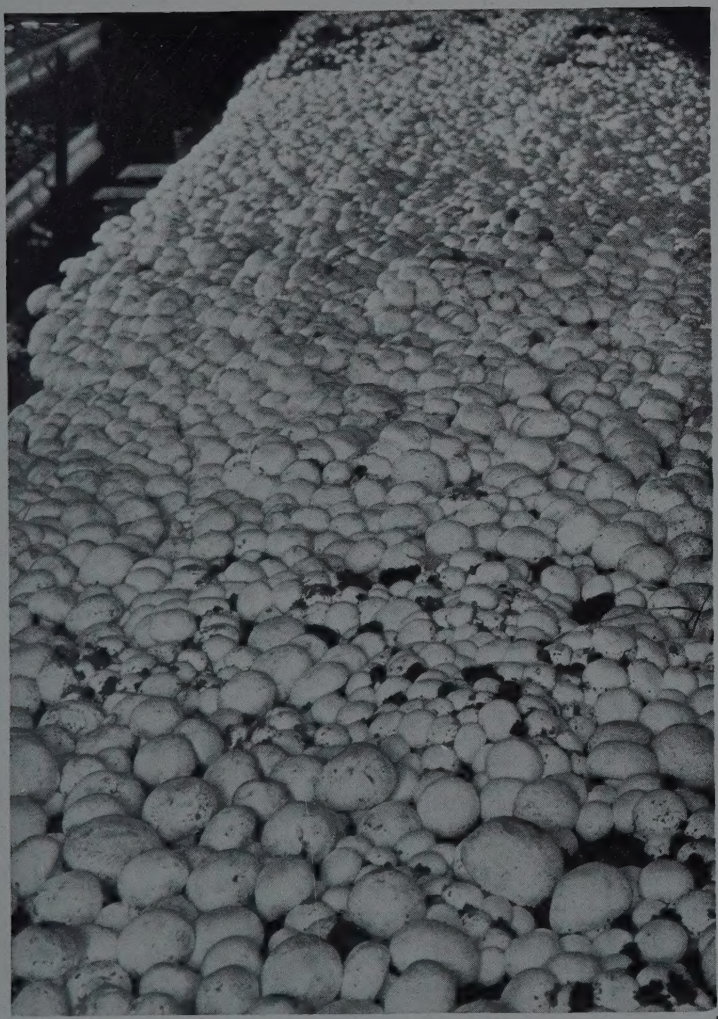
LAST MONTH'S PUBLICITY CONTRIBUTIONS

The following contributions were received last month to the MGA Publicity Fund.

*†**Spawn Merchants:**—
S. A. F. Sampson Ltd., Oving, Chichester, Sussex.
Monlough Food Production Co., Ballygowan, Belfast.

Salesmen:—
†C. Snowdon & Co. Ltd., Castlefolds Market, Sheffield 1.

*Contributions by spawn merchants are not for publication.
†Previous contributions already acknowledged.



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(zineb)

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(zineb)

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